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ABSTRACT

This booklet presents the text of a lecture by Linda S. Wilson, president of Radcliffe College (Cambridge, Massachusetts) on the role of higher education as well as the responses, questions and discussion that followed. The lecture is preceded by a preface and an introduction by Morton W. Weir, chancellor of the University of Illinois at Urbana-Champaign (UIUC). In discussing the future of higher education during what she characterizes as a period of change, President Wilson argues against using a liberal-conservative continuum to think about higher education. Instead, she suggests that in order for higher education to successfully achieve what society aspires for it, higher education must (1) engage the full range of individuals' talents more completely, (2) "ignite the flame of confidence in ourselves and in higher education itself", and (3) give the public the capacity for thoughtful change. The lecture then looks at five key topics: access to higher education, strategies to inspire achievement and integrity, realignment of talents and tasks, improvement through new knowledge and technologies, and strategies to cope with the explosion of knowledge. The balance of the booklet presents three responses by administrators and scholars from UIUC and questions from the audience with their responses. (JB)

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Beyond Conservation and Liberation:

The Education of Our Aspirations

by Linda S. Wilson

President, Radcliffe College

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Beyond Conservation and Liberation:

The Education of Our Aspirations

DAVID DODDS HENRY

President, University of Illinois

1955-71

Beyond Conservation and Liberation:

The Education of Our Aspirations

by Linda S. Wilson

President, Radcliffe College

Thirteenth David Dodds Henry Lecture

University of Illinois at Urbana-Champaign

February 17, 1992

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Preface

The David Dodds Henry Lectures at the University of Illinois were established by friends of the University to honor President Henry. Two decades later, Linda Wilson, President of Radcliffe College, expresses concern about the proper role of higher education during a period of change in the thirteenth Henry lecture, "Beyond Conservation and Liberation: The Education of Our Aspirations."

As the title suggests, President Wilson finds the conservative-liberal continuum not particularly satisfying as a way of thinking about higher education for the future. Rather, she challenges us to think about what our higher educational institutions will need to become in order to achieve our aspirations. President Wilson suggests that progress on any number of objectives for higher education will depend in large degree upon higher education's success along three dimensions:

- Engaging the full range of the talents of our people much more completely
- Igniting the flame of confidence—our own confidence in ourselves and the public's confidence in higher education and in itself
- Giving the public the capacity for thoughtful change

President Wilson explores five topics that she believes will be important to realizing our aspirations: access to higher education, strategies to inspire achievement and integrity, realignment of talents and tasks, improvement through new knowledge and technologies, and strategies to cope with the explosion of knowledge.

This monograph is organized to communicate the rich dialogue that took place on February 17, 1992, at this public lecture. Following Linda

Wilson's lecture are three responses by administrators and scholars from the University of Illinois at Urbana-Champaign, questions from the audience, and responses to these questions.

Paul W. Thurston, *editor*
Associate Professor and Head,
Department of Administration,
Higher and Continuing Education
University of Illinois at Urbana-Champaign

Introduction

It is a great pleasure to welcome Linda Wilson back to campus. Many here in this room worked closely with her during her years as Associate Vice Chancellor for Research and Associate Dean of the Graduate College. And once you have worked with Linda, you respect her values, her judgment, and her wisdom. She is a perfect choice to present the 1992 David Dodds Henry Lecture.

President Wilson is an honors graduate of Tulane University and earned a Ph.D. in chemistry from the University of Wisconsin at Madison. After serving as a postdoctoral fellow, she was appointed research assistant professor at the University of Maryland and later taught at the University of Missouri at St. Louis. She then moved into a research administrative position at Washington University in St. Louis before coming to this campus in 1975.

In 1985, she left her Urbana-Champaign dual role as Associate Vice Chancellor and Associate Dean to become Vice President for Research at the University of Michigan.

And in 1989, she was selected for her present position as President of Radcliffe College.

Dr. Wilson is a fellow of the American Association for the Advancement of Science and serves on many national boards and commissions. She currently chairs the Advisory Council on Science and Engineering Personnel, an advisory group to the National Research Council.

She is widely recognized as an expert in science policy, in issues relating to scientific personnel, and in government-industry relations.

But above all, Linda Wilson is an imaginative and a perceptive observer of higher education. That is why we are fortunate to have her with

us today to speak on "Beyond Conservation and Liberation: The Education of Our Aspirations."

Morton W. Weir
Chancellor
University of Illinois at Urbana-Champaign

Beyond Conservation and Liberation:

The Education of Our Aspirations

by Linda S. Wilson

President, Radcliffe College

Friends and colleagues, I welcome the opportunity to join with you today in honoring a great educator and institutional leader, David Dodds Henry. This institution and the people it serves have benefited from his high aspirations, his leadership, his courage and confidence. To speak from this platform in the lecture series that honors his contributions is a rare privilege and, I might add, a humbling experience. It is also a special pleasure to return to an institution where I spent such happy and productive years.

I want to talk to you today about what I hope will happen in higher education.

In the past we have accomplished truly great things by our commitment to learning. There is much of our enterprise that we should conserve as important and highly functional. We know that in recent years we've already enlarged our nation's possibilities through liberation—through the removal of constraints that prevented large parts of our population from pursuing their potential.

Even while these important tasks of conservation and liberation must continue, we should enlarge our goals. Effective higher education will be even more important in the future than it has been in the past. What lies ahead will be even more challenging than what we have already faced, in part because it will have to take place more through reconfiguration than through expansion.

Our greatest need today, therefore, is the education of our own aspirations.

We must envision what it is that we want to achieve, and then keep those goals very clearly in mind. Many particular objectives will capture our attention and energies along the way, such as economic competitiveness, revitalizing cities, environmental equilibrium, rational energy policy, health, and social well-being—all difficult objectives to achieve, but progress on any of them, indeed on all of them, will depend in large part on higher education's success along three specific dimensions:

- For many reasons, we, as a nation, must aspire to engage the full range of the talents of our people much more completely.
- For many reasons we must again ignite the flame of confidence—our own confidence in ourselves and the public's confidence in higher education and in itself.
- And for many reasons we must give the public the capacity for thoughtful change.

In other words, we need to ask: What will it take to lift up the next generation and to sustain and develop all the generations as they change and their world changes?

In asking these questions, and in presenting my thoughts today, I have one overarching purpose: Even though we face serious problems, I want to communicate my optimism for our enterprise.

Most speeches these days begin with a litany of the daunting challenges before us. I do not think we need to be reminded of them again. Instead, I want to stir you to engage in an exhilarating exploration of what higher education can be in the future. I freely admit that I believe passionately in the importance of such an exploration. That is because I have high

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confidence in what such exploration will yield for our future and because I believe that the profession of higher education is a noble calling. In its pursuit we develop the national trust—that is, the minds and will of our people. The values we conserve and the imaginations we liberate are essential, but they alone are not enough. We must go beyond conservation and liberation. We must constantly educate our own aspirations to keep pace with the challenges of a rapidly changing world and a constantly developing population.

Because we aspire to engage the full range of the talents of the people, we will need to open our eyes to the scope and variety of their talents and to the broad distribution of those talents in our society. We will need to examine the fit between those to be served and those providing service on the one hand and the programs and organizations we have designed on the other. As we learn more about those we serve and the challenges they must meet, we need to explore how redesigning and redistributing the roles of individuals and institutions can help us improve our quality, productivity, and adaptability. Perhaps most of all we need to build into the core of our cognitive framework the expectation of continuing change, the commitment to understand it, and the courage to embrace and guide it.

Confronting change is not an altogether new challenge, of course. And we can learn from the ways educators in the past have revised their visions of higher education. But the challenge has grown much more complex. There are more stakeholders now, and the stakes are higher.

Premises and Progress: Education for the Age of Science

In 1959, not long after the Russians launched Sputnik, the President's Science Advisory Committee issued a major statement on education for the

age of science.[1] The statement began with the premises of the American system of education. It spoke to the varieties of talents in our population. It recognized the need for continuing adjustment to keep pace with the problems and opportunities that would face our country in the coming ages.

Two of the several premises that were expressed in the 1959 statement were "that no child shall be deprived of the fullest opportunity to develop his talents" and "that no one shall be condemned to a lowly position or elevated to a high one by the mere circumstance of the wealth, power and prestige of his ancestors."

This statement of premises reflected the high aspirations of leaders who were convinced of the value of knowledge. They challenged the nation to make knowledge broadly accessible and enabling. Numerous stimuli, not the least of which were national security concerns and the wave of young people born immediately after the Second World War, contributed to a major transformation of our system of higher education.

A college education changed from a privilege for a few to an opportunity for the many. The institutions shifted their principal focus on teaching to a more complex mission of teaching, service, and research. The result is an extraordinary, pluralistic, and distributed higher education enterprise and a veritable explosion of knowledge. Both have contributed to the prosperity and stature of the nation.

Some of the recurring values in the development of the higher education enterprise for many years were the positioning of the young for a productive role in society and for upward mobility, the encouragement of individual initiative in both students and faculty, the assurance of an integral role for research in graduate education, and, as a result of external political and ideological intrusion from time to time, a very deep commitment to freedom of inquiry and expression.

We still hold these values high. Indeed, preservation of the integrity of institutional mission and protection from external interference in the educational program are still among the basic responsibilities assigned to the trustees of our nation's colleges and universities.

The President's Science Advisory Committee in 1959, in its recommendations for adjusting to continuing changes in society, also explicitly addressed, albeit briefly, the changing role of women. The committee noted that modern technology provided some release from domestic drudgery, and that earlier marriage advanced the time at which women could make substantial commitments outside the home. They concluded, therefore, "that women constitute an enormous potential resource for research and scholarship and teaching." They called for "conscious efforts to assist women to make the contributions of which they are capable." It was never quite clear to me whether they had a narrow view of that, or a broad view. I will give them the benefit of the doubt.

The civil rights legislation of the mid-sixties, and the extension of the focus of its prohibitions against discrimination to sex as well as race, religion, and country of origin, propelled the expansion of the higher education system forward. All over the country the doors of the classrooms and the laboratories and the libraries opened to both women and minorities. These changes had international as well as national roots. For example, survivors of the Second World War had intense reactions against all ideas of racism and discrimination, and those who had experienced or observed the decolonization of countries during the 1950s and 1960s were powerfully influenced by the recurring voices that proclaimed the "right of the people to run their own lives." These factors added to the momentum of the change toward a much broader meaning of human values in this country.[2]

This wave of emancipation or liberation presented an enormous challenge to our institutions of higher education, as soaring enrollments stretched their capacity and brought students of widely varying preparation into a system that had previously assumed its students would come with a common background.

Since 1959, we have come a very long way in developing talent. We are now educating far more of our population than we ever have before. We have made especially strong progress in educating more women.

Recently the Department of Education published a fascinating report of the results of a longitudinal study of a large national sample of the high school class of 1972.[1] The report addressed the educational careers and labor market experience of the men and women of that class from the time they graduated until they were thirty-two years old. The study revealed that the women outperformed men on most of the performance and attitudinal dimensions studied, but continued to lag in salaries in most of the occupations examined.

The author, Clifford Adelman, points out that "if we play it right, if we allow our oft stated beliefs in rewards for educational achievement to govern, if economic justice can determine economic strategy, then the women of the United States will make the difference." They are, he says, "our special asset as we enter the next century" because they "are the best educated and best trained in the world and will constitute 64 percent of the new entrants to the work force over the next ten years."

Now, in 1992, in spite of the gains we can see being made, it is still sobering to look back at the aspirations expressed in 1959, when we hoped that no child would be deprived of the fullest opportunity to develop his talents, and to realize how imperfectly those ideals have been executed in higher education and in society at large. The task of tapping fully the

potential of the talents of our population is far from complete, and it is much more complex than we initially thought. Indeed, in some areas we now seem to be losing ground. Furthermore, for a variety of reasons, the stakes are higher now and the urgency is much more acute.

Our progress has been slowed by a number of factors, including persistent shortfalls in resources to be sure, but the factor that has perhaps been the most limiting is those cultural beliefs and traditions that have circumscribed the expectations we have for the roles and contributions of the substantial part of our population, namely, women and minorities. Myths, stereotypes, and biases regarding gender, ethnicity, race, and class have interfered with our pursuit of our expressed ideals and have thwarted our economic and social progress. Although we are a nation of immigrants, we have learned very imperfectly how to understand, how to value, and how to benefit from our differences. From time to time, far more often than is good for us, we forget the principles that bind us together as a people.

Now, as we look ahead to a new century, we must keep very clearly in mind what it is that we hold in common despite all our differences: namely, our commitment to liberty and democracy. We must renew our efforts to develop our human resources to their fullest potential and to engage that rich array of talent in the pursuit of larger common purposes, to pursue a better life for the people in this nation and in the world.

It is this background that makes me focus on the education of our aspirations, that makes me urge an invigorating exploration of what higher education can be in the future.

Avenues for Exploration

Let me suggest some interesting avenues for exploration as a way to engage your imaginations. I have chosen five:

- Access to higher education
- Strategies to inspire achievement and integrity
- Realignment of talents and tasks
- Improvement through new knowledge and technologies
- Strategies to cope with the explosion of knowledge

Each of these holds some keys to unlock the treasure we seek. There are, of course, many others. Let me amplify briefly what I mean by each of these.

1. ACCESS TO HIGHER EDUCATION It is a serious mistake to think that access to higher education means just changing the rules and opening the doors of educational institutions. It means much more. Specifically, access in the fullest meaning of the term means:

- Changing and enlarging the expectations of students, teachers, supervisors, leaders, and the public in general about the capabilities and contributions of those who have previously been excluded or disadvantaged
- Developing in individuals strong self-esteem and sense of self-competency and discovering what experiences reinforce these attributes
- Reexamining assumptions that research accomplished by using only a narrow population, such as educational and psychological research on only white male subjects, yields valid conclusions for women and minorities
- Recognizing and valuing the accomplishments of women and minorities as well as those of men so that *all* individuals may have a better sense of their heritage and potential
- Seeking and exploring new perspectives on the fields of knowledge as new entrants to scholarship bring new questions and different experiences to bear on discovery and understanding

- Identifying and understanding the barriers to progress in academic and professional careers that women, minorities, and other disadvantaged groups have faced so that these can be removed or overcome
- Addressing the communication challenges men and women, minorities and the majority, and the advantaged and the disadvantaged face together in the classroom, the home, the workplace, and in volunteer activities, so that they can become more effective partners in their endeavors
- Acknowledging the serious underlying issues that threaten families, institutions, and communities so that creative and effective social policies can be developed and sustained

We have not yet achieved access in this full meaning of the term, despite the changes in rules for admission, financial aid, and employment. Achieving full access takes, as a very first step, a change in mind-set from gatekeeper to architect. It then takes acts of individual will to reflect carefully on assumptions and attitudes, to reject myths and stereotypes, to enlarge expectations and opportunities, to recognize previously unnoticed barriers. Corporate improvements must follow. They too are essential, but they flow most easily and are most likely to persist if they are rooted in individual courage and commitment. The most important thing to remember is that full access holds very high promise because it enlarges the potential for *everyone*.

2. STRATEGIES TO INSPIRE ACHIEVEMENT AND INTEGRITY We need to develop a more comprehensive portfolio of strategies for enabling and motivating achievement and for inspiring integrity and ethical conduct.

In our country competition has played a dominant part. It has served as a driving force for exploration, innovation, and industriousness. It has been, for the most part, a creative force and a refining fire with many benefits. It is an integral part of our culture, linked to our deep commitment to the value of the individual, to freedom. It has been functional for a young nation that had a high need and many opportunities for pathfinders.

But as our nation matures, as our interdependencies globally and locally are recognized, and as we learn more about the wonderful variety of human beings, the less likely it becomes that a single strategy to motivate achievement will suffice. Furthermore, if we examine more carefully the history of our reliance on competitiveness, we discover that some of what we had first perceived as beneficial results are in fact serious dilemmas. We learn that there has been much waste through the talent not nurtured or not permitted a sphere of action. We grieve that high stakes in winner-take-all situations have driven a few to choose unethical means of achievement. We find that some of what appeared as the effectiveness of competitive striving was instead the result of not fully acknowledging our advantages on an uneven playing field. To illustrate the opportunity in exploring for a more versatile set of diversified strategies, I will focus briefly on research universities.

If we look at the challenges now facing the research universities, we find major societal problems to which research could make significant contributions. We find rapidly rising costs of the conduct of research, exploding intellectual opportunities, but limited resources. We will not be able to meet these stimulating challenges if the expectations and behavior of those who inhabit the system focus principally on individual interests, that is, if we use only a strategy of competition.

Our American research university is itself a complex system, and the network of research universities in which it fits is a meta system encompassing great diversity. Within this larger system we find a myriad of idiosyncratic solutions to a variety of common problems. It will be impossible to find policy adjustments to respond to the future potential of research universities that will simultaneously optimize each of the individual interests involved.

To be acceptable and energizing in a way that will not stifle or demoralize those on whom we must depend for creativity in an age of knowledge, our reframing of our academic research enterprise must capture the imagination and engage the participants' energies for a more profound purpose or a set of purposes in common, rather than just the various individual goals that now serve as the primary motivating force.

The present research system is driven by individuals' passion to know and by competition. It invokes a military model of winning and losing, of intense competition for high stakes, of survival of the fittest. It offers little reward for collaboration and cooperation.

In an earlier era, when the system was smaller, when resources more nearly tracked opportunities, when expectations and aspirations were more nearly consonant with realities, and when individual effort sufficed to make significant progress, the competitive strategy was an effective stimulus. The exhilaration of competing and frequently winning attracted high talent to the universities. The academic research system's pluralistic opportunities provided a supportive environment for most capable and creative scientists.

But for a variety of reasons the competitive game now falls short of the mark. More than individual initiative is often required to make progress, although that is one core ingredient. And sometimes the flame of

competition burns so intensely that it consumes and destroys rather than ignites and sustains. Longer odds for winning dim the exhilaration of competition for research support. There are other strong attractions for the high talent. Disturbing hints of diminished integrity surface and undermine the confidence and respect of the public.

We need to find a more effective and adaptive approach. We need a portfolio of strategies with a win-win focus, not just a single strategy with one or only a few winners and many losers. We need a mix of individual and common motivating forces, stimulated by a new realization of our interdependencies and their opportunities, challenges, and constraints.

We need to develop the more sophisticated and diversified approach of combining the strategies of competition, complementarity, and collaboration for different elements in our research system. We need to discover how and when to use each of these more effectively. It will be essential to continue to provide opportunities for the individual initiative that is so crucial to invention, but we must find ways to cooperate more effectively in order to enlarge our understanding and to extend the value of our resources as well. What we seek, then, is a more robust paradigm and a compelling sense of a large purpose in common. We need to work wiser, not harder.

Such a paradigm shift holds high promise not only for research, but also for teaching and learning and for organizational evolution. We are learning more and more about the benefits of peer tutoring, small study groups, and team projects for students and about the benefits of industrial partnerships, instructional consortia, collaborative curriculum design, and sharing of unique or costly academic facilities.

As we explore this avenue for reframing higher education for the future, we will need to keep our fundamental goals in mind and invent

options that enable all to contribute and thrive in an increasingly interdependent world.

3. REALIGNMENT OF TALENTS AND TASKS A recent article in the *Harvard Business Review* by John Kotter[4] addressed the difference between leadership and management. One of his key points was the role leaders must play in alignment (or realignment) of talent with the tasks to be accomplished. As we invent our future for higher education, we should reflect on the roles individuals and institutions now play and explore ways to develop and align tasks, opportunities, and capabilities more effectively. The roles individuals and institutions play must contribute value. To do so they need to be motivating, enabling, effective, honest, and realistic—a set of obviously interrelated characteristics.

The first step is to recognize how unrealistic it is to expect individual and institutional roles to remain relatively unchanged when there have been such transformations in the people who make up our workforce and student bodies, and such changes in the political, economic, and international dimensions of our external context.

The second step is to recognize the interdependence of different roles individuals and institutions play within the academic enterprise and in society.

The third step is to respond to the more complex patterns of people's lives and develop a greater capacity for thoughtful change.

The fourth step is to recognize that realignment of roles is an important source of renewal. It is in itself an energizing force.

Let me explain what I mean.

Our organizational entities, from the family unit all the way to the large corporate enterprise, were designed in previous eras. Their design

features, including the nature of the roles performed and the assignment of those roles to individuals or institutions, were influenced by another context, by previous purposes and problems, and by the beliefs and operating styles of the leaders of that time. We are struggling now in part because many of those design features are seriously anachronistic for the current situation. They are likely to become even more so for the future.

Because a recent David Dodds Henry Lecture, by Chancellor Donna Shalala, addressed the topic of changing roles of institutions, particularly the role of the land-grant university, I will focus more on individual roles than on institutional roles today. But the fruitful opportunities for exploration span both territories.

Consider the roles of science and engineering faculty in the academic research enterprise. This enterprise was designed when almost all of the players were quite similar, mainly white males, sole wage earners in their families, who lived near their institutions. A significant factor in their extraordinary achievement in these fields has been their sacrifice of personal life to the long hours in the laboratory, a sacrifice spurred both by their passion to know and discover and by their competitiveness. Much of that personal sacrifice was made possible by the accommodations and support of other family members and by the easy accessibility of their workplaces.

The new immigrants to the science and engineering workforce, namely, women and minorities, bring different expectations and have home responsibilities that traditionally have been assigned to them in a differentiated way. Rarely have women and minorities been in a position to call on the family support and accommodation that have generally undergirded the contributions made by the majority men who have preceded them.

It is essential that we recognize that in the future most of the majority men who are now entering the science and engineering faculty

ranks will no longer be able to claim such support from their homes in the future to the same degree that they have in the past. A very much larger fraction of women are in the workplace today; indeed, two thirds of the mothers in this country are now in the workforce, not at home. Yet we are the only industrialized nation in the world that continues in its policies to pretend that women are not in the workforce.[5] For example, as Gail Collins pointed out in a recent issue of *Working Women*, "We have an elementary school system that behaves as if one parent is always home and an economic system that requires two incomes per family.

Some redistribution of roles and responsibilities among men and women is both necessary and inevitable. The deep cultural roots of the traditional roles of men and women will retard and complicate the transition, but we need to recognize how very much the design features built into our institutions are linked to these out-of-date expectations and how much they therefore impede progress toward our goals of engaging talent effectively.

The organizational structure and processes of our academic enterprise were built on certain assumptions about the social context of work—a context, as I have just described, which permitted intense, single-purposed devotion to task. They have striking points of incompatibility with a context in which the key players hold the multiple competing responsibilities our faculty now have.

These individuals' roles now cover a much broader range than ever before. They serve as educators, counselors, researchers, entrepreneurs, policy advisors, peer reviewers, public relations performers, financial managers, personnel managers, to name several of their roles *within the enterprise*. They have responsibilities related to child care, elder care, and home care *within the family*. They play roles for schools and other agencies

in the community. Furthermore, those who work in our large cities travel increasingly long distances between home and work.

During the last ten to fifteen years, our colleges and universities have made major changes in the way they interact with business and industry. New partnerships, consortia, centers, and other collaborative relationships have been developed to improve and accelerate the knowledge and technology transfer processes. Additional tasks and roles associated with these new relationships have emerged as well.

It is quite unrealistic to expect that individuals will be able to excel simultaneously in all these dimensions. Yet, with a few exceptions, higher education institutions have been slow to adjust their formal personnel structures and policies to accommodate the accretion of roles that has in fact occurred. We have been extremely reluctant to adapt the reward systems within the enterprise to differentiate among the roles to be played.

Given the changes in the nature and complexity of responsibilities, many of which affect not only our faculty, but also our staff and students, it seems obvious that we need to explore how the contemporary set of responsibilities intersects with the features of our enterprise. New options need to be imagined. Adjustments need to be invented. There are many places to begin our search for improvements: the design and distribution of roles among and between faculty and staff, indicators for quality and effectiveness, the tenure system, mechanisms for research and teaching support, strategies for professional development, mentoring, and information exchange, the nature of compensation, or even the hours of operation.

The future is ours to invent. And a number of institutions are already addressing these issues in constructive ways. (Indeed, I recall from my days here at the University of Illinois a number of earlier innovations.) Two more recent explorations come immediately to mind. The University

of Miami is studying its faculty productivity and the reward system. Its faculty and administration are considering a redesign of the nature and term of faculty appointments to provide, in their words, "greater flexibility, responsiveness, and sensitivity to the inevitability of human change during a lifetime."[6] The University of Indiana's exploration is called "adjusting the educational fit" for a student body more diverse in age, ethnicity, and background than they have ever before tried to serve. Through a process of "concerted dialogues" they are exploring "how to serve the learning needs of new majority students more effectively."[7]

As we search for ways to reframe our institutions to align talent and task more effectively, I think we should consider carefully the extent to which a hierarchy of values plays a part in our thinking. I have mentioned the variety of roles faculty now play within the enterprise. Each role is important and takes special skills. Yet we often behave as though only one role really matters—that of research, of creating new knowledge. Historically, the faculty has played the central role in our colleges and universities. The many other roles have usually been defined as supporting roles and, frankly, have often been undervalued by the faculty. This hierarchy among roles seems to have become counterproductive for quality management in an organization that has such widely dispersed points of contact with its "customers" and its public, and that depends so crucially upon the confidence and support of both students and the public. It seems dysfunctional in an organization in which so many interdependencies affect the achievement of every individual.

Let me suggest another approach. Assume that each individual institution as a system and the set of institutions that comprises the meta system need talent well aligned with tasks. Then what we need is:

- Some very high talent in every part of this system
- Effective processes to guide and lead each part and to link the various parts of the system
- Effective ways for individuals to move among roles and parts of the system over time

All three of these ingredients depend on mutual respect for the various roles. All three are necessary for adaptability to changes in context. A system, whether it is a family, a community, an institution, or even the society as a whole, will not function well with all of the highest talent concentrated in any one part, and the talent will concentrate if multiple roles are not valued.

4. IMPROVEMENT THROUGH NEW KNOWLEDGE AND TECHNOLOGIES It is probably safe to say that in the last three decades more new knowledge has been discovered about those we seek to educate and about the educational process than we learned in all prior years. And yet our basic approach to education has stayed remarkably constant.

Most of the core faculty in our American institutions of higher education learned their fields by intense study and research and recognize how essential it is to stay current with developments in their areas. But most model their teaching on how they themselves were taught in college and graduate school, not by drawing on research developments in teaching and learning. Most of our instruction is still didactic, despite the fact that we have learned how very little listeners retain of what they hear. Though we have found that learning is accelerated by exploring questions and interactive processes, we still usually teach introductory courses by laying a groundwork of facts and principles, leaving out connections to the people

who have advanced the field and delaying the introduction of the wonder of discovery to the more advanced levels of instruction.

Even though we know that it takes some time for a listener to process a question and formulate an answer, we rarely wait ten seconds before reiterating or amplifying a question to stimulate student response. Even though we have learned how crucial feedback is to learning, many courses still provide only sparse opportunities for students to test their own progress and comprehension.

Burgeoning new knowledge in cognitive science, psychology, neurobiology, anthropology, physics, computer science, just to name a few fields, offers extraordinary opportunities for the enhancement of our capacity to identify and develop the talents of our people. What we still need are effective mechanisms to deliver this new knowledge to our educators and an eagerness, an open-mindedness to introduce that new knowledge into our instruction.

The amazing developments in information technology offer quite wonderful avenues for our inventiveness. Perhaps their most important contribution is their reframing of the dimensions of possibility. Aspirations are always framed in part by perceptions of what is possible. New windows of opportunity have been opened again and again through technological advances. But two large hurdles have to be overcome: the high initial capital cost of new technologies and the complex human adjustments involved in the introduction of new technologies.

The National Academy of Engineering and the Commission on Behavioral and Social Sciences recently issued advice for managers considering a move to new technology.[8] The report includes case studies from a set of manufacturing firms, hospitals, and other organizations that eventually were able to benefit in major ways from new technology. The advice is

quite relevant for the introduction of new technologies to advance higher education, namely, to give more weight to the people involved. "The case studies in the book portray the challenges, frustrations, disruptions, setbacks, and ultimately the rewards that a people-oriented approach to integrating technology can entail." Furthermore, as Tora Bikson and J. D. Eveland point out, "If workers do not seem to embrace new technology, their reluctance is not the product of a presumed natural resistance to change. Rather, organizations breed resistance by failing to recognize new task demands and new competencies acquired by employees, with commensurate changes in titles, job grades, pay, or career paths."

Thus we can see the intersection between this avenue for our inventiveness and the avenue of redesigning and redistributing roles to align talents and tasks. The University of Illinois, of course, has been an extraordinary pathfinder in developing information technology and in using it for instructional purposes.

5. STRATEGIES TO COPE WITH THE EXPLOSION OF KNOWLEDGE We are in an era in which we must not only educate well a much greater percentage of the population than we have ever tried to reach in the past. We must also address the opportunities and consequences of an explosion of knowledge. In this "Age of Knowledge" as we have come to call it, we must develop not just more knowledge, but also better and broader knowledge, more connections among knowledge areas, and much better assimilation and accommodation of knowledge in the basic functions of all areas of society.

We must address much more seriously the consequences of the explosion of knowledge, its specialization and fragmentation. It is not enough just to be a contributor to the expansion of knowledge. Unorganized, unrelated, and uninterpreted knowledge becomes inaccessible. It

loses its potential and erodes commitment to the value of knowledge.

In the future, research universities will serve as important links to the worldwide knowledge base as the knowledge producers in other nations develop and prosper. Research universities will also need to serve as "architects and engineers" of effective knowledge transfer interactions—to provide the push and to respond to the pull of technological and social innovations.

We will therefore need to develop new strategies and technologies for organizing and crosslinking knowledge, for synthesizing the diverging strains of knowledge, for linking knowledge to human needs and the enhancement of the human condition. To do so, institutions of higher education will need to develop and accord higher value to the roles of synthesizing, interpreting, and transferring knowledge.

Our strategies for coping with the explosion of knowledge therefore will intersect with both our redesign and realignment of roles and our exploration of new technologies. We will also have to reconsider how we finance higher education, to align the tasks, the resources, and the values in transparent and mutually reinforcing ways.

The Challenge

These five avenues:

- Full access to higher education
- Strategies to inspire achievement and integrity
- Realignment of tasks and talents
- Improvements through new knowledge and technologies
- Strategies to cope with the explosion of knowledge

are some of the fruitful areas for exploration as we educate our aspirations.

Let me reiterate a statement of goals:

- To engage the full range of the talents of our people much more completely
- To ignite the flame of confidence—both our own and the public's confidence
- To increase the nation's capacity for thoughtful change

I am convinced that we need some reconfiguration and realignment to accomplish these goals, that "business as usual" will not suffice. Some of our educational leaders believe that the university of the future will bear only passing resemblance to the institutions we now know. Surely advances in technology, changing economics, changing expectations of our constituents will all have a profound effect. The extraordinary political, economic, and social developments elsewhere in the world will transform the larger context in which we operate. To thrive in such a future we all need to be inventors and explorers.

I am also convinced that the reframing of higher education will be a continuing process, and for the most part an incremental one. We do not need revolution. What we need is a more robust design that will give us more flexibility, incentives, adaptability, and accountability.

We are too complex an enterprise to expect that extraordinary leaders can single-handedly provide new answers. Resources are too constrained to expect that the changes we need will come through expansion. The challenge to develop the capacity for thoughtful change therefore is squarely before each and every one of us who participates in higher education. The initiative to explore and the opportunity to invent exist in each of us.

It is abundantly clear that a successful future will require knowledge, talent, innovation, and will. Creativity is common in our enterprise.

Our culture supports pathfinding. Neither inventing nor pathfinding is necessarily comfortable, but the goal—lifting up the next generation and sustaining and developing all the generations—is essential and ennobling.

I know that presenting these ideas and suggesting these avenues for exploration to an audience at the University of Illinois is in some ways preaching to the converted. Indeed, my own thinking has been shaped by my experiences here at the Urbana-Champaign campus. I have seen firsthand the promise and the product of deep commitment to education and enthusiasm for discovery. I hope that spirit will continue to thrive here and help lead the way for higher education.

Let me conclude with two quotations that give me high hopes. The first is from a recent issue of *Policy Perspectives* of the Pew Higher Education Research Program:

> The faculty are addressing the right issues: how different as well as difficult the terrain has become; how traditional habits and norms no longer seem effective; how little they themselves have changed while the world around them has been fundamentally altered.[9]

The second is from Kouzes and Posner's recent book on the leadership challenge:

> The challenge of creating a new way of life is intrinsically motivating to leaders and followers alike.[10]

We are all stakeholders in meeting the challenge to contribute decisively in the future. I have pledged my best efforts. And I derive hope and confidence because I know that my colleagues at the University of Illinois have much to contribute to the cause. I invite you to engage in discovery, to pursue the avenues I have suggested, and to develop others.

Thank you for the opportunity to be a part of the David Dodds Henry Lecture Series.

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Response by Mildred B. Griggs

Professor, Department of Vocational and Technical Education
University of Illinois at Urbana-Champaign

I am compelled by my experience in higher education over the past twenty-plus years to base my reactions today on what I have learned from the past: Change is neither lasting nor effective if it is not institutionalized, if it does not become a characteristic of the total institution. I will focus on two of the five avenues for exploration suggested by President Wilson: access to higher education, and realignment of talents and tasks. Those avenues are highly related, and they relate to my professional interests and a role that I play here in this University.

Civil rights laws guarantee access and opportunity. However, I think that one of the main reasons why we have not achieved greater diversity in higher education is that commitment and effort to achieve this diversity have resided in a limited number of individuals and offices. Efforts to achieve change have occurred primarily in the margins and not at the center of the institutions' missions and their main academic and business functions. Efforts to achieve increased access and to align tasks, opportunities, and capabilities to correspond more effectively to important aspects of contemporary society tend to be ad hoc rather than long-term activities. The marginal nature of this commitment to change becomes very evident in the transitory environments of higher education because, when key individuals leave their positions or offices, the work often ceases. Also, when budgets are limited, dollars directed at efforts to achieve increased diversity and notions of realignment tend to be redirected toward activities that are considered to be more central to the mission of institutions.

Today we're being challenged to envision and plan a different future. I suggest that we focus on institutionalizing change aimed at

increasing and enhancing diversity by making it part of the expressed institutional mission and reward system. Full responsibility for achieving this change must rest with every member and must become part of the fiber and fabric of the institution. Leadership for such change must come initially from top administrators, presidents, and chancellors.

Progress toward achieving increased diversity has occurred on this campus because of the actions of enlightened leaders. Such progress is evidence of the importance of leaders acting on behalf of diversity.

President Wilson talked about the need to motivate. Well, it may seem overly simplistic, but in all of my years in education I've learned that people are motivated through intrinsic and extrinsic rewards. In the past, there has been no question of what counts in higher education. And there has been little doubt that work that counts would be rewarded. When leaders in higher education commit themselves to the principles of access and equity in the use of talents, develop and communicate expectations of having these principles implemented, and make the achievement of these principles part of the reward structure, I think institutional change will follow. The process may also help us to overcome the notion that in order for some of us to succeed, others must fail, because we can all stand to benefit from these changes.

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Response by Richard L. Schacht

Professor, Department of Philosophy
University of Illinois at Urbana-Champaign

If there is one thing this past century has taught us, it is that humanity is not guaranteed to turn out well. And if there is one thing this past *decade* has taught us, it is that there are no advantages that cannot be squandered. That is why I consider President Wilson's address to be so timely.

"We must go beyond conservation and liberation," President Wilson tells us. Indeed we must—and go beyond the silly controversies between their zealous crusaders and critics as well. How disheartening it is to see the debate about the future of our educational institutions degenerate into a shouting match between opposing parties, obsessed with but one of these proper functions of higher education to the detriment of both. Higher education must *both* conserve *and* liberate, even if it must also do more; for, to paraphrase Kant if I may, "Conservation without liberation is blind, while liberation without conservation is empty." The trick is to strike the right balance; but striking right balances is not easy when zealots at the two extremes treat everyone in between as part of the problem.

Yet striking the right balance between conservation and liberation is only a beginning. "Our greatest need today," President Wilson observes, "is the education of our aspirations." This message goes to the heart of the matter, and into the heart of education itself. If our students aspire to nothing more when they leave us than when they come to us, we are in big trouble. And if there is any one thing for which the past several decades are to be lamented, it is the general flattening and coarsening of the aspirations of young and old alike. I don't know what is sadder—for young people to aspire to nothing more than easy grades and party-time now, with easy

work and big bucks and fun in the sun to come; for their parents to aspire to nothing more for them than a decent job and a comfortable life; for our politicians to aspire to nothing more than election and reelection; for our citizens to aspire to nothing more than remaining number one; for our universities to aspire to be nothing more than research monasteries or engines of economic development; or for our faculty to aspire to nothing more than tenure, salary increases a step ahead of inflation, and the replication of themselves in their graduate students.

We as a people are suffering from a poverty of aspirations, and while it is imperative, as Wilson urges, "to change and enlarge [our] expectations . . . about the capabilities and contributions of those who have previously been excluded or disadvantaged," this is not enough. To be worth expanding, inclusion has to be worthwhile in ways that are not merely seductive. There likewise will not be enough for the aspirations of the newly emancipated citizens of the old second world of Eastern Europe and of the struggling members of the third world societies to come to resemble those of the yuppie generation. A global village of shopping malls, with a credit card in every pocket and a VCR in every living room, is no consummation of the human adventure so devoutly to be wished.

President Wilson is right: we need "a more robust paradigm" for our endeavors in higher educational institutions that are to be deserving of the name. She also is right to urge that we must reframe our academic research enterprise for a more profound purpose or set of purposes in common, rather than just individual goals—particularly when these individual goals are conceived primarily in terms of mere material gain and social status. And she is right to contend that, to this end, we "need to develop and accord higher values to the roles of synthesizing, interpreting, and transferring knowledge." We need to do this for all of our sakes, for we

are not only entrusted with the preservation of our human heritage and its transmission, and with the continuation of the enterprises of research and scholarship that add to it; we are also entrusted with the mission of catalyzing both endeavors in the service of the enhancement of human life, thus midwifing the emergence of a humanity that will be more assured of a future and more deserving of it.

Our academic research in educational enterprise, if it is to contribute significantly to this great goal, must attract additional substantial public and private resources. It must also once again attract the best and the brightest of the rising generation. It must identify and cultivate their abilities—among the previously excluded and disadvantaged *and* among the previously included and advantaged—and it must inspire them to aspire to use their abilities to make a difference in the quality of life in our society and world. Our academic enterprise will attract neither support nor talent if it does not regain and reframe its larger aim and purpose in this way.

President Wilson calls us back from many familiar temptations through which the academic enterprise can lose its soul, which threaten to marginalize research universities and higher education precisely at a time in our history when their leadership is the most urgently needed. There is more that needs to be done than she has elaborated. All that she mentioned needs to be done. But it could all be done as widely and as well as is humanly possible, and this would still leave unmet the most fundamental challenge of aspiration education.

President Wilson touched upon this fundamental challenge in the very last quotation she cited at the end of her lecture. The key phrase in that quotation is "the challenge of creating a new way of life." The real challenge broached here is twofold. It may be expressed in two phrases made much of by Nietzsche, who hit a good many nails on the head with his philosophical

hammer, as well as a number of thumbs: They are "revaluation of values" and "creation of new values." These twin tasks are as difficult as they are important. No amount of knowledge, old or new, obtainable through either scholarly inquiry or scientific investigation, can suffice to carry them out and settle these matters once and for all—although knowledge of many things and many kinds is highly relevant to them. They have a philosophical sound to them, but they are not tasks for philosophers only. They are, or ought to be, central concerns of all of us and of all thinking human beings who would *lead* rather than merely live out their lives.

Revaluing received values, creating new values, and applying them in our own personal, professional, and public lives is part of what living a human life is all about. Values are the stuff of aspirations. We are not born with sets of them hard-wired into us. But human beings do live by them and can hardly live without them. We acquire them in various ways early in our lives, and many people live their whole lives by those they simply assimilate along the way. But that need not be the way it is. Our values can be transformed for better or for worse, and this is what makes the education of our aspirations both possible and so crucial.

Higher education can provide a context in which many kinds of learning and many forms of scholarship, research, and artistic activity can be brought to bear on the ongoing process of value revaluation and creation. This process should not be thought of as stopping upon graduation or after the Ph.D. is awarded, or as properly halting where classes and research end and real life begins. Nor is it something we philosophers or we doctors of philosophy and professors of whatever have mastered and finished and are here to dispense to our students.

To be sure, we had better be better than our students are at thinking about what we do and about why and how it matters. We also

need to take seriously our role as mentors of forms of the life of the mind as ways of living a human life, showing our students and others what it means to have aspirations beyond those they already know. This imposes responsibilities upon us for the ways in which we structure their encounters with the values we represent. But we too can be affected and transformed by our interactions with them and with each other as well—and also with those beyond academia. Or, if we are immune to any effect they might have upon our own aspirations, we probably should not be teaching or administering either.

President Wilson has done us all a great service by prompting us to recall and reflect upon a theme that must not be neglected in these trying times. The stakes could hardly be higher. If we forget what higher education is all about, we cannot count on anyone else to remember and to recall us to it. Our aspirations, and those of our students and fellow citizens and others in the wider human community, will have more to do with what becomes of us all than anything else that happens in this world—again, for better or for worse. Their education, the education of our aspirations and theirs, had better be our deepest concern. In all of our teaching, research, and scholarship, as in our determinations of academic policy and institutional change, we will do well to bear President Wilson's theme in mind.

RESPONSE BY LARRY L. SMARR
Director, National Center for Supercomputing Applications
University of Illinois at Urbana-Champaign

I want to touch on three themes that President Wilson brought out in her talk that I see every day. They are among three of the greatest challenges the country has to deal with.

The first is this theme of the move from a pure competition system to one in which collaboration is the successful strategy. I see this theme as a fundamental response to increased complexity of problems, whether they are basic research, societal, or industrial. We see this theme in a variety of ways in both the university system and in the institutional structures for funding and pursuing science. Interdisciplinary research, for example, is becoming institutionalized, with such things as the Beckman Institute on this campus or the Program for the Study of Cultural Values and Ethics. Universities are beginning to try to treat this as more than just a jargon word, but rather as a way of life—a way that may perhaps challenge some of the stricter departmental divisions of the past. Interdisciplinary research is coupled to the rise of centers throughout the academic structure and the move from the world of individual scholarship to that of collaborative scholarship—in many cases across institutional boundaries, as well as across departmental boundaries within an institution. Industrial-university partnerships have become actually quite critical to the existence of many of these endeavors.

In my own field of supercomputing, the federal government, President Bush, and on the other side Senator Gore and the Congress, have called for a decade of grand challenge teams to use the exponentially increasing power of supercomputing to attack problems on a scale far

beyond anything we can dream up today. All of those will require new institutional structures to support that collaboration across the country and, indeed, around the world. An example of an application is global climate change. I'm right in the middle of one of the most complicated collaborations I've ever seen, which is to try to build a supernational "consortium of consortia" that brings together the Defense Advanced Research Projects Agency, the National Science Foundation, and the Department of Energy to create a national electronically connected center for exploring massively parallel supercomputers. This national information infrastructure can only be built because of standards. It can only happen because everybody doesn't invent his own version of the telephone, as it were, so that we can actually wire this country together in a way that we can all talk to each other and work together with this explosion of knowledge.

That brings me to the information technologies, a second point I wanted to touch on. Of course, when President Wilson was Associate Vice Chancellor for Research here at the University, she was intimately involved in the formation of our National Center for Supercomputing Applications. She is therefore very clear about how this interacts with the University community. However, more important than supercomputers is the emergence of the national network. The network has been one of the greatest forces for democracy in research in this country that has ever happened. There are hundreds of universities that will soon have more than one million researchers hooked together by the network. From their desktops, they are becoming able to go out through the network to each other, to any of the national computing facilities, or to the emerging digital libraries. The network is color-blind, it's sex-blind, and it doesn't know Harvard University from a four-year college, nonresearch facility. It's extraordinary to go through the database of the 15,000 researchers that have

now used the four NSF supercomputer centers over the network and to see the distribution of where those people are coming from. You no longer need to have multimillion-dollar facilities on your campus to be able to compete and publish in the *Physical Review*. It's been a tremendous force for democratization. And it's just starting. Next will be collaboration over the network; before long we will be having video-, audio-, and tele-conferencing, along with digital access to libraries for anybody who is on that network, from their personal computers or in fact from their notebook computers, which pretty soon all students and faculty will own everywhere. In five years they'll all be wireless and hooked into the network from wherever they are. It's going to totally change our notion of scholarship. The humanities and the arts can take full leadership in this, and, in fact, on this campus many of the most exciting projects to me are ones in the departments of art, history, literature, sociology, and so forth. Universities are based on the faculty knowing more than the students; that concept is very wrong in the world of computers. The younger the people are, the better and more acculturated they are to computers. Grade school kids are far better than high school kids, high school kids are far better than college students, and when you get to people like professors, they're basically over the hill. When I'm talking to grade school kids, I always tell them that it's very important to respect their elders, even if they don't know how to use computers.

That brings me to a final point, which is that I think the greatest shortage in this country today in every aspect of life is simply leadership. Leaders have disappeared in this country in this time. I don't know why; it's depressing to me to see it. It's going to provide for many scholarly treatises later on to explain why it happened in the United States, of all places. But it perhaps is correlated with one of the most historically intense

periods of change—politically, technologically, and socially—that probably has ever occurred. The universities are right in the middle of this change. They've got to respond. They've got to restructure and reconfigure. They cannot continue to meet this challenge by just bleeding to death, which is the way we're doing it now. There have got to be real decisions made. It's virtually impossible in the current university system for leaders to emerge because of all the different constituencies that seem to have sort of a gridlock on each other. But I think that a leadership will emerge, and those universities in which it does emerge will become the leaders—the new Harvards, if you like. Harvard may or may not be among them. I think it's such an exciting moment.

Let me give you just one example for the land-grant universities. One of the greatest programs that the land-grant university created was the agricultural extension service. It was basically invented because at that time that's what the economy was. Well, the economy isn't there anymore; even in this state I think agriculture is something like 15 percent of the state product. The notion of combining the information technologies with the new collaborative idea, and taking all of the various disciplines of this university and coupling them back out into the state, into the small businesses and doing what we did for agriculture—I think would give a whole new meaning to the importance of land-grant university. I think if that were done, there wouldn't be any question in the legislators' minds or the taxpayers' as to why we exist, or why we should be supported.

Questions and Discussion

John Cheeseman, Associate Professor, Department of Plant Biology, UIUC: I have a question for both President Wilson and Chancellor Weir. This is not the first lecture that we've had on the campus this semester that encourages diversity and interdisciplinary work and so on. What are the University of Illinois and Radcliffe College doing to make it acceptable for a young assistant professor to actually participate in a collaborative program, to get that research or get that cross-disciplinary approach and still get tenure?

Chancellor Weir: From the tenor of your question, obviously we're not doing enough. We do have a long way to go in that regard, I have to admit. I can't speak for President Wilson, and I'll let her answer that question for Radcliffe in a moment, but I do see some signs that changes are beginning to occur. First of all, it is true now, and it has been true for a significant period of time, that it is easier, though not very easy, to cross disciplinary boundaries on this campus, more so than on most other research university campuses. And we have many institutes, centers, and so on devoted to interdisciplinary work, or at least multidisciplinary work that attests to that. On the side of rewards and the possibility of breaking down some of the departmental or interdepartmental barriers, I'm heartened by a recent report from a senate committee that looked carefully at promotion and tenure. The report began to lay out a new view of how faculty members ought to be rewarded and how faculty-reward structures ought to be operating on this campus. I think it would be well for all of us to take a careful look at that report, think seriously about it. It has its detractors, very strong ones, even in the senate itself. But I believe this will point a way toward doing some things that we haven't been able to do before and in beginning to move toward a better alignment of tasks and talents.

PRESIDENT WILSON: The question you've raised is one that's plagued us for many, many years. Since Radcliffe does not have its own faculty, it would be a bit presumptuous of me to respond for Harvard.

It seems to me the basic principle is to get the expectations straight and to sort out what is a departmental role and what is the interdisciplinary role to assure mutual respect. The difficulties for interdisciplinary activity really come most from the difficulties of assessing them. In many cases at the University of Michigan, interdisciplinary activities did not put a vital force back into the department. It was as if the most exciting parts of the intellectual life of the institution were spinning out of the departments, were impoverishing the departments. When those sorts of forces were recognized and began to be mitigated, and the balancing of them handled better by the administration and discussed more openly, it began to ease. The recognition of those tensions for the offering of tenure straightened out quite a bit. I think what is particularly difficult to deal with for your question is the fact that times have changed so very much in educational institutions, in terms of the financial picture and the opportunities for expanding the faculty. It's hard to separate what is a matter of how interdisciplinary activities are handled and what is simply a constraint on resources.

EDWIN "NED" GOLDWASSER, Professor of Physics Emeritus, UIUC: I'd like to comment on the last question that was asked, but also on the main thrust of Dr. Wilson's talk. Going back to the last question, there have already been comments made about interdisciplinary activities and the possibility of getting tenure if you're involved in such activities. I come from a field, high-energy physics, which is one of the worst offenders, probably the worst offender, with regard to extreme egomania and competition. At the same time, that field has developed into one with a very high level of

cooperation. There are groups of 100 and 200 physicists who work on a single experiment and who weed out from that kind of activity those people who should get tenure at their respective universities. It's a very complicated matter, but I'd like to say that I think it's been addressed. I think it is happening. Universities have changed their standards for awarding tenure so as to accommodate this change in the environment of the society.

But now to go back to the main thrust of Dr. Wilson's speech. I have always agreed with 98 percent of what she has thought and what she has said, but it does raise some concerns in my mind. It seems to me that she was appealing for higher education to accommodate the realities of the very rapidly changing world. What worries me is that if her concern had been expressed more broadly to the whole society or to the whole educational system I would have been more comfortable with it, but one of the biggest changing realities in higher education is the education of the students who enter our system. If we react too quickly to accommodate that reality of life, I think we may throw out the baby with the bath water. It seems to me that society has to address the broad question of education, and frankly that happens with old age. I don't know how to do it. I have no idea of how to do it. I was in Taiwan a number of years ago just at a time when they were giving their national examination, which occurs annually and which determines whether the kids taking that exam go on into academic higher education or into vocational education. Other crossovers can be made subsequent to that examination, but it's a very critical exam. What impressed me in Taiwan was that in the newspapers, the big high quality newspapers, the headlines and the whole front page were devoted to that examination—to the preparation of the students, to how the parents should be involved, and so on and so forth. You would never see in this

country the *New York Times* or any other newspaper devoting that attention—and the reason they don't is that our society isn't that concerned with the whole process. It seems to me that until we do that, we're going to have the kind of product of our families, of our primary and secondary schools, that makes a very serious problem for higher education. Whether it should accommodate them, or whether it should do something to change the system so that the pool that comes into higher education is quite different from what it is becoming.

PRESIDENT WILSON: I think that was a statement; I'm not sure it was a question. But, and as usual, I tend to agree with Ned. We've worked together a long time and see many things the same way. I think it's terribly important at this particular point in time that we recognize the difficulties that we have in our educational institutions but not wallow in them—that we not accept as a given the way things are at the moment, but also that we come to understand that we won't go back to the good old days, and that we have got to be inventive about the ways in which we deal with constraints on resources, with the complexity of the way higher education fits into the larger scheme of things. That challenge is really the greatest opportunity at the moment. And it is a major transition for us, especially those of us who lived through the 60s and 70s and especially the 80s in terms of the way that the institution fits in society. In some ways what was happening in that period couldn't possibly go on forever, and we need to take advantage of what we gained in that period—the extraordinary burst of energy that we got there—and learn now how to find the economies, how to reinvent connections, how to be inventive in new ways to take full advantage of that great growth to look out at what it is that we need to do in the future. And I have a lot of confidence that we can do that. I have enormous

confidence in the inventiveness of the people in our higher education systems.

Our biggest challenge is not to expect that it will be an extrapolation of what we experienced in the past. I think that coming to grips with that, without its being a sense of accepting too low a limit, is the real challenge for us. For people who enjoy the intellectual challenge, it seems to me that facing that limit, that set of potential limits, can be the most exhilarating thing we've done in higher education thus far. Simply expanding, which was the challenge of the 60s, is not enough. We must learn to address limits, recognizing that higher education is only one of several very major problems that our nations have to address at this point in time and figuring out how to get more from a system that we already thought we had wrung the last ounce out of. That can either be exhilarating or exhausting, and frankly I choose to make it exhilarating, because I don't like to be exhausted.

PROFESSOR SMARR: I think Ned is on to something with this notion of looking at the educational system as a whole, rather than at the universities being privileged to not have to worry about grade school and high school, as if that's somebody else's problem. Then we can complain when these kids show up and are not prepared. I don't have any real answers, but we do have some experience. All of the national supercomputer centers, both National Science Foundation and the Department of Energy and NASA, are engaged in grade school and high school programs as an organized part of their activities now. We have tremendous facilities here at the University, and we have incredibly impoverished facilities in even some of the best grade schools and middle schools and high schools. We've recently been experimenting with facility sharing, where, for instance, we have a class-

room of Mac II, twin Mac II with big screens, and so forth. That's our national training facility, but we've adopted something like three grade schools, a middle school, and a couple of high schools locally, and the teachers just cart the whole school classes over. They just camp out for days at a time. Our facilities now aren't particularly helping anybody sitting empty, so it doesn't displace anything on our part. The response is phenomenal from the students and teachers. All of a sudden, learning is really exciting, and all of a sudden, instead of school being a trip back to the last century, which is what it seems to most of them, it seems to be like the world they know. That's the world of Nintendo, Super Nintendo, TV, and interactive learning. There is a national contest for high school students looking at pipeline issues rather than science understanding, in which we have three weeks of intensive training for the super-quest kids who won a contest in how to use supercomputers in scientific projects. The fact is that one or two of the ones who were in that are now finalists in the Westinghouse talent search, I heard just today. So there are a variety of experiments going on here. All I can say is that it seems like an awful lot of our facilities in this University stand empty a lot of the year. And yet we're in a town in which they don't have those facilities in the schools, which is where the kids are coming from and what they are complaining about. I think you could multiply this across most cities in America, at least the large ones. And I think there is a nugget of something here that should be pursued and could provide some hope for the future.

PROFESSOR SCHACHT: I don't want to miss this opportunity to agree with Ned, so I'm taking this opportunity to do so. I think the problem that you're pointing to is an excellent illustration of the kind of problem I was trying to underscore when I talked of poverty of aspirations and about how crucial it

is—what people aspire to and what kinds of expectations help to nurture the aspirations of students as they come along. But it's not just the kids' fault; it's also their parents' fault. And a lot has gone wrong with our whole value structure, as it were, in this society in the last generation or so. It's going to take a lot of work to turn that around, if work is the right word for it. But I don't think that anything is more important than to do that. If we don't succeed, the next generation isn't going to be able to pull its oar, to say the least. The problem is not one that we can actually solve right here by doing something in our lives or in our libraries, but it's at least a problem that we can begin to get a handle on if we understand what the problem is and what it takes to nurture expectations and the relation between aspirations and achievement. I won't give my theory about what went wrong since 1969 in this country, but we really need to think hard about that. And that's one of the kinds of questions I was trying to direct our attention to in my response.

PROFESSOR GRIGGS: We could take a more optimistic view and hope that, since the university only represents a microcosm of society at large, if we can be successful in implementing these changes within this institution, then there is certainly hope for taking them beyond the bounds of this institution. And I think we have to hope for that, for if we can demonstrate that we can make these changes, then it's possible for society to make changes, because we will be sending people out into society who have experienced this change, and have lived with it, and understand the value of it. We will therefore, perhaps, be producing more leaders who have the vision for society that some people think is lacking now. So I think that makes it imperative that we try to do the things that President Wilson suggested.

ELDON JOHNSON, Vice-President Emeritus, UIUC: I was a member of David Henry's last cabinet, just short of the Civil War. I wonder if we don't need to extend these aspirations that were so well discussed and pay some attention to the operational aspect, specifically on the aspiration of access, equal access to pick up the talent wherever it happens to be. Don't we need to extend your plea for more attention, more access for women and minorities to include the economic minority? Otherwise, you will get more women and more minorities, and they'll still be from the elite economically. If you're going to tap the talent, you'll have to extend that conception a bit, it seems to me. And I'm wondering about your suggestion that we need no revolution. If we don't need a revolution in the way in which we go at this, we have grossly deceived ourselves, it seems to me, for all these years that you can finance adequately student access to higher education by loading more on the student, by increased tuition, and by salving your conscience on the basis of scholarships and loans. And if I speak with some force about that, that's because I get a lot of literature from the World Bank. The World Bank is going around the world prescribing in cookie-cutter fashion, telling Bangladesh, for example, that they should have cost recovery, load on tuition, and then disguise the matter somehow or other with scholarships and loans. Bangladesh! I think that's preposterous. I think it is essentially unfortunate that we're pursuing the same policy, and therefore I suggest we may need a revolution in that respect.

P. DAVID PEARSON, Dean, College of Education, UIUC: Picking up partially on Eldon's statement and relating his vocabulary to that Professor Schacht used earlier—it seems to me that one of the problems, as I think about education, is that, if you want to know the best predictor of performance in our elementary schools, you can take the mean income level of the families in

the schools. What you find is that poverty is one of the best inverse predictors of performance at almost any level. And as I look at what we've done as a society in the last twenty years, it seems to me that we've created a whole new underclass of people who never existed before. I think to pick up on Professor Schacht's theme on the poverty of aspirations, there exists a level of poverty at which you either have no aspirations, or else you have a set of aspirations that has nothing to do with what universities have to offer our society. That to me is a really telling social problem, and we have to contribute a solution or we really will lose the confidence of the public.

MORTON W. WEIR, Chancellor, UIUC: This isn't to say anything by way of disagreement—I think that the problem that you draw attention to is a terribly serious problem. I only want to say that my concern in addition to that problem is that even if that problem were to be solved, it's the other kids that I'm still worried about. Because you say that poverty is an inverse predictor and that income is an effective predictor of achievement or of doing better anyhow, but the aspirations that are coming out of that part of our society are as impoverished as the aspirations coming from anywhere else. That's why it seems to me that poverty is virtually endemic in the society, because there has got to be some significant segment of the society that is setting a high level of aspiration for others to at least notice and perhaps take seriously. I'm concerned that the aspirations of what used to be the included and advantaged group are now pretty humble, modest, and *mediocre*. Dare I use the word? So the level of attainment is going to follow the level of aspirations.

THOMAS RILEY, Professor, Department of Anthropology, UIUC: I would just like to mention something to Professor Schacht. I think somebody said,

"Philosopher know thyself," and if I look at my own discipline—and I choose my own because it's the only one I know the statistics from—about 28 percent of the full professors in anthropology are women, just as an example. Some 36 percent of associate professors are women, and more than 50 percent of the assistant professors in the field are women. We reached parity somewhere around twelve years ago, in 1980, in terms of the number of women doctorates that we produce. I'm using this as an example, and yet, still, twelve years later we are really constricted at the top ranks in academia in our discipline, and I'm assuming that's the case in most other disciplines, too. The reason for that is not that there aren't women who came in who are as good as men. The Blackfeet Indians had a kind of women called "manly women," who for the most part were beyond menstruation in some instances, and they could act like men, I guess you could say, and take on the roles of men. To a great extent I think the women who manage to succeed take on the roles that President Wilson was talking about, the kind of constraints that there are to succeeding in our business. An incredible, an awful lot of women are not willing or able to engage in a kind of environment that is perhaps not conducive to creating a university that is representative of the kind of world that Professor Griggs describes. End of statement.

MORTON W. WEIR: Well, thank you very much for a fantastic lecture, our respondents for responding so well. People from the audience, we would remind you that we were urged by President Wilson to again ignite the flame of confidence in ourselves, in the public toward ourselves, and in the public toward itself.

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